



SEQUENCE LISTING

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KELL, DOUGLAS B.
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<120> BACTERIAL PHEROMONES AND USES THEREFOR

<130> 49946-60261

<140> 09/445,289

<141> 2000-05-11

<150> PCT/GB98/01619

<151> 1998-06-03

<150> GB 9711389.8

<151> 1997-06-04

<150> GB 9811221.2

<151> 1998-05-27

<160> 62

<170> PatentIn Ver. 3.2

<210> 1

<211> 362

<212> PRT

<213> Mycobacterium tuberculosis

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Gly	Thr	Ala	Met	Arg	Val	Thr	Thr	Met	Lys	Ser	Arg	Val	Ile	Asp	Ile
			35					40						45	
Val	Glu	Glu	Asn	Gly	Phe	Ser	Val	Asp	Asp	Arg	Asp	Asp	Leu	Tyr	Pro
			50				55					60			
Ala	Ala	Gly	Val	Gln	Val	His	Asp	Ala	Asp	Thr	Ile	Val	Leu	Arg	Arg
			65			70				75					80
Ser	Arg	Pro	Leu	Gln	Ile	Ser	Leu	Asp	Gly	His	Asp	Ala	Lys	Gln	Val
				85					90					95	
Trp	Thr	Thr	Ala	Ser	Thr	Val	Asp	Glu	Ala	Leu	Ala	Gln	Leu	Ala	Met
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Thr	Asp	Thr	Ala	Pro	Ala	Ala	Ala	Ser	Arg	Ala	Ser	Arg	Val	Pro	Leu
			115				120						125		

Ser Gly Met Ala Leu Pro Val Val Ser Ala Lys Thr Val Gln Leu Asn
 130 135 140
 Asp Gly Gly Leu Val Arg Thr Val His Leu Pro Ala Pro Asn Val Ala
 145 150 155 160
 Gly Leu Leu Ser Ala Ala Gly Val Pro Leu Leu Gln Ser Asp His Val
 165 170 175
 Val Pro Ala Ala Thr Ala Pro Ile Val Glu Gly Met Gln Ile Gln Val
 180 185 190
 Thr Arg Asn Arg Ile Lys Lys Val Thr Glu Arg Leu Pro Leu Pro Pro
 195 200 205
 Asn Ala Arg Arg Val Glu Asp Pro Glu Met Asn Met Ser Arg Glu Val
 210 215 220
 Val Glu Asp Pro Gly Val Pro Gly Thr Gln Asp Val Thr Phe Ala Val
 225 230 235 240
 Ala Glu Val Asn Gly Val Glu Thr Gly Arg Leu Pro Val Ala Asn Val
 245 250 255
 Val Val Thr Pro Ala His Glu Ala Val Val Arg Val Gly Thr Lys Pro
 260 265 270
 Gly Thr Glu Val Pro Pro Val Ile Asp Gly Ser Ile Trp Asp Ala Ile
 275 280 285
 Ala Gly Cys Glu Ala Gly Gly Asn Trp Ala Ile Asn Thr Gly Asn Gly
 290 295 300
 Tyr Tyr Gly Gly Val Gln Phe Asp Gln Gly Thr Trp Glu Ala Asn Gly
 305 310 315 320
 Gly Leu Arg Tyr Ala Pro Arg Ala Asp Leu Ala Thr Arg Glu Glu Gln
 325 330 335
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 Pro Val Cys Ala Ala Arg Ala Gly Ala Arg
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<210> 2
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 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 2
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Leu	Val	Thr	Thr	Ser	Pro	Ala	Gly	Ile	Ala	Asn	Ala	Asp	Asp	Ala	Gly				
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Asn	Leu	Pro	Pro	Ala	Pro	Asp	Ala	Ala	Pro	Val	Asp	Thr	Pro	Pro	Ala				
	65				70					75					80				
Pro	Glu	Asp	Ala	Gly	Phe	Asp	Pro	Asn	Leu	Pro	Pro	Pro	Leu	Ala	Pro				
				85					90					95					
Asp	Phe	Leu	Ser	Pro	Pro	Ala	Glu	Glu	Ala	Pro	Pro	Val	Pro	Val	Ala				
			100					105						110					
Tyr	Ser	Val	Asn	Trp	Asp	Ala	Ile	Ala	Gln	Cys	Glu	Ser	Gly	Gly	Asn				
	115						120					125							
Trp	Ser	Ile	Asn	Thr	Gly	Asn	Gly	Tyr	Tyr	Gly	Gly	Leu	Arg	Phe	Thr				
	130					135					140								
Ala	Gly	Thr	Trp	Arg	Ala	Asn	Gly	Gly	Ser	Gly	Ser	Ala	Ala	Asn	Ala				
	145				150					155					160				
Ser	Arg	Glu	Glu	Gln	Ile	Arg	Val	Ala	Glu	Asn	Val	Leu	Arg	Ser	Gln				
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Gly	Ile	Arg	Ala	Trp	Pro	Val	Cys	Gly	Arg	Arg	Gly								
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<210> 3

<211> 174

<212> PRT

<213> Mycobacterium leprae

<400> 3

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			20					25					30						
Gly	Gln	Ala	Ser	Pro	Ala	Thr	Asp	Ser	Glu	Trp	Asp	Gln	Val	Ala	Arg				
		35					40					45							
Cys	Glu	Ser	Gly	Gly	Asn	Trp	Ser	Ile	Asn	Thr	Gly	Asn	Gly	Tyr	Leu				
	50					55					60								
Gly	Gly	Leu	Gln	Phe	Ser	Gln	Gly	Thr	Trp	Ala	Ser	His	Gly	Gly	Gly				
	65				70					75					80				
Glu	Tyr	Ala	Pro	Ser	Ala	Gln	Leu	Ala	Thr	Arg	Glu	Gln	Gln	Ile	Ala				
				85					90						95				

Val Ala Glu Arg Val Leu Ala Thr Gln Gly Ser Gly Ala Trp Pro Ala
100 105 110

Cys Gly His Gly Leu Ser Gly Pro Ser Leu Gln Glu Val Leu Pro Ala
115 120 125

Gly Met Gly Ala Pro Trp Ile Asn Gly Ala Pro Ala Pro Leu Ala Pro
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Pro Pro Pro Ala Glu Pro Ala Pro Pro Gln Pro Pro Ala Asp Asn Phe
145 150 155 160

Pro Pro Thr Pro Gly Asp Val Pro Ser Pro Leu Ala Arg Pro
165 170

<210> 4
<211> 407
<212> PRT
<213> Mycobacterium tuberculosis

<400> 4
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Lys Ile Ala Phe Thr Gly Ala Val Leu Gly Gly Gly Gly Ile Ala Met
20 25 30

Ala Ala Gln Ala Thr Ala Ala Thr Asp Gly Glu Trp Asp Gln Val Ala
35 40 45

Arg Cys Glu Ser Gly Gly Asn Trp Ser Ile Asn Thr Gly Asn Gly Tyr
50 55 60

Leu Gly Gly Leu Gln Phe Thr Gln Ser Thr Trp Ala Ala His Gly Gly
65 70 75 80

Gly Glu Phe Ala Pro Ser Ala Gln Leu Ala Ser Arg Glu Gln Gln Ile
85 90 95

Ala Val Gly Glu Arg Val Leu Ala Thr Gln Gly Arg Gly Ala Trp Pro
100 105 110

Val Cys Gly Arg Gly Leu Ser Asn Ala Thr Pro Arg Glu Val Leu Pro
115 120 125

Ala Ser Ala Ala Met Asp Ala Pro Leu Asp Ala Ala Ala Val Asn Gly
130 135 140

Glu Pro Ala Pro Leu Ala Pro Pro Pro Ala Asp Pro Ala Pro Pro Val
145 150 155 160

Glu Leu Ala Ala Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro
165 170 175

Ala Ala Pro Ala Asp Pro Ala Pro Pro Ala Asp Leu Ala Pro Pro Ala
180 185 190

Pro Ala Asp Val Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu Pro
 195 200 205
 Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp Pro Ala Pro
 210 215 220
 Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala
 225 230 235 240
 Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Val
 245 250 255
 Glu Leu Ala Val Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro
 260 265 270
 Ala Ala Pro Ala Glu Leu Ala Pro Pro Ala Asp Leu Ala Pro Ala Ser
 275 280 285
 Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Pro
 290 295 300
 Ala Glu Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Ala
 305 310 315 320
 Val Asn Glu Gln Thr Ala Pro Gly Asp Gln Pro Ala Thr Ala Pro Gly
 325 330 335
 Gly Pro Val Gly Leu Ala Thr Asp Leu Glu Leu Pro Glu Pro Asp Pro
 340 345 350
 Gln Pro Ala Asp Ala Pro Pro Pro Gly Asp Val Thr Glu Ala Pro Ala
 355 360 365
 Glu Thr Pro Gln Val Ser Asn Ile Ala Tyr Thr Lys Lys Leu Trp Gln
 370 375 380
 Ala Ile Arg Ala Gln Asp Val Cys Gly Asn Asp Ala Leu Asp Ser Leu
 385 390 395 400
 Ala Gln Pro Tyr Val Ile Gly
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<210> 5
 <211> 155
 <212> PRT
 <213> Mycobacterium leprae

<400> 5
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 1 5 10 15
 Lys Ser Ala Val Val Ser Gly Ile Val Thr Ala Ser Met Ala Leu Ser
 20 25 30
 Thr Ser Thr Gly Met Ala Asn Ala Val Pro Arg Glu Pro Asn Trp Asp

	35		40		45												
Ala	Val	Ala	Gln	Cys	Glu	Ser	Gly	Arg	Asn	Trp	Arg	Ala	Asn	Thr	Gly		
	50					55					60						
Asn	Gly	Phe	Tyr	Gly	Gly	Leu	Gln	Phe	Lys	Pro	Thr	Ile	Trp	Ala	Arg		
65				70					75						80		
Tyr	Gly	Gly	Val	Gly	Asn	Pro	Ala	Gly	Ala	Ser	Arg	Glu	Gln	Gln	Ile		
				85					90					95			
Thr	Val	Ala	Asn	Arg	Val	Leu	Ala	Asp	Gln	Gly	Leu	Asp	Ala	Trp	Pro		
			100					105					110				
Lys	Cys	Gly	Ala	Ala	Ser	Asp	Leu	Pro	Ile	Thr	Leu	Trp	Ser	His	Pro		
		115					120					125					
Ala	Gln	Gly	Val	Lys	Gln	Ile	Ile	Asn	Asp	Ile	Ile	Gln	Met	Gly	Asp		
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<210> 6
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 <213> Mycobacterium tuberculosis

<400> 6																	
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Pro	Ile	Ser	Pro	Leu	Ser	Leu	Ile	Gly	Asn	Ile	Ser	Ala	Thr	Ser	Gly		
			20					25					30				
Asp	Met	Ser	Ser	Met	Thr	Arg	Ile	Ala	Lys	Pro	Leu	Ile	Lys	Ser	Ala		
		35					40					45					
Met	Ala	Ala	Gly	Leu	Val	Thr	Ala	Ser	Met	Ser	Leu	Ser	Thr	Ala	Val		
	50					55					60						
Ala	His	Ala	Gly	Pro	Ser	Pro	Asn	Trp	Asp	Ala	Val	Ala	Gln	Cys	Glu		
65					70				75						80		
Ser	Gly	Gly	Asn	Trp	Ala	Ala	Asn	Thr	Gly	Asn	Gly	Lys	Tyr	Gly	Gly		
			85						90					95			
Leu	Gln	Phe	Lys	Pro	Ala	Thr	Trp	Ala	Ala	Phe	Gly	Gly	Val	Gly	Asn		
			100					105					110				
Pro	Ala	Ala	Ala	Ser	Arg	Glu	Gln	Gln	Ile	Ala	Val	Ala	Asn	Arg	Val		
	115						120					125					
Leu	Ala	Glu	Gln	Gly	Leu	Asp	Ala	Trp	Pro	Thr	Cys	Gly	Ala	Ala	Ser		
	130					135					140						

Gly Leu Pro Ile Ala Leu Trp Ser Lys Pro Ala Gln Gly Ile Lys Gln
 145 150 155 160

Ile Ile Asn Glu Ile Ile Trp Ala Gly Ile Gln Ala Ser Ile Pro Arg
 165 170 175

<210> 7

<211> 154

<212> PRT

<213> Mycobacterium tuberculosis

<400> 7

Met Thr Pro Gly Leu Leu Thr Thr Ala Gly Ala Gly Arg Pro Arg Asp
 1 5 10 15

Arg Cys Ala Arg Ile Val Cys Thr Val Phe Ile Glu Thr Ala Val Val
 20 25 30

Ala Thr Met Phe Val Ala Leu Leu Gly Leu Ser Thr Ile Ser Ser Lys
 35 40 45

Ala Asp Asp Ile Asp Trp Asp Ala Ile Ala Gln Cys Glu Ser Gly Gly
 50 55 60

Asn Trp Ala Ala Asn Thr Gly Asn Gly Leu Tyr Gly Gly Leu Gln Ile
 65 70 75 80

Ser Gln Ala Thr Trp Asp Ser Asn Gly Gly Val Gly Ser Pro Ala Ala
 85 90 95

Ala Ser Pro Gln Gln Gln Ile Glu Val Ala Asp Asn Ile Met Lys Thr
 100 105 110

Gln Gly Pro Gly Ala Trp Pro Lys Cys Ser Ser Cys Ser Gln Gly Asp
 115 120 125

Ala Pro Leu Gly Ser Leu Thr His Ile Leu Thr Phe Leu Ala Ala Glu
 130 135 140

Thr Gly Gly Cys Ser Gly Ser Arg Asp Asp
 145 150

<210> 8

<211> 99

<212> PRT

<213> Streptomyces coelicolor

<400> 8

Ile Arg Thr Ala Ala Val Thr Leu Val Ala Ala Thr Ala Leu Gly Ala
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Thr Gly Glu Ala Val Ala Ala Pro Ser Ala Pro Leu Arg Thr Asp Trp

	20		25		30										
Asp	Ala	Ile	Ala	Ala	Cys	Glu	Ser	Ser	Gly	Asn	Trp	Gln	Ala	Asn	Thr
	35						40					45			
Gly	Asn	Gly	Tyr	Tyr	Gly	Gly	Leu	Gln	Phe	Ala	Arg	Ser	Ser	Trp	Ile
	50					55					60				
Ala	Ala	Gly	Gly	Leu	Lys	Tyr	Ala	Pro	Arg	Ala	Asp	Leu	Ala	Thr	Arg
65					70					75					80
Gly	Glu	Gln	Ile	Ala	Val	Ala	Glu	Arg	Leu	Ala	Arg	Leu	Gln	Gly	Met
				85					90					95	
Ser	Ala	Trp													

<210> 9
 <211> 438
 <212> PRT
 <213> Bacillus subtilis

<400> 9															
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Asn	Leu	Ser	Glu	Glu	Lys	Glu	Ala	Phe	Phe	Ile	Thr	Gln	Lys	Met	Lys
			20					25					30		
Lys	Leu	Phe	Ser	Val	Lys	Leu	Ser	Lys	Ser	Lys	Val	Ile	Leu	Val	Ala
		35					40					45			
Ala	Cys	Leu	Leu	Leu	Ala	Gly	Ser	Gly	Thr	Ala	Tyr	Ala	Ala	His	Glu
50						55					60				
Leu	Thr	Lys	Gln	Ser	Val	Ser	Val	Ser	Ile	Asn	Gly	Lys	Lys	Lys	His
65					70				75						80
Ile	Arg	Thr	His	Ala	Asn	Thr	Val	Gly	Asp	Leu	Leu	Glu	Thr	Leu	Asp
				85					90					95	
Ile	Lys	Thr	Arg	Asp	Glu	Asp	Lys	Ile	Thr	Pro	Ala	Lys	Gln	Thr	Lys
			100					105					110		
Ile	Thr	Ala	Asp	Met	Asp	Val	Val	Tyr	Glu	Ala	Ala	Lys	Pro	Val	Lys
		115					120					125			
Leu	Thr	Ile	Asn	Gly	Glu	Glu	Lys	Thr	Leu	Trp	Ser	Thr	Ala	Lys	Thr
	130					135					140				
Val	Gly	Ala	Leu	Leu	Asp	Glu	Gln	Asp	Val	Asp	Val	Lys	Glu	Gln	Asp
145					150					155					160
Gln	Ile	Asp	Pro	Ala	Ile	Asp	Thr	Asp	Ile	Ser	Lys	Asp	Met	Lys	Ile
				165					170					175	

Asn Ile Glu Pro Ala Phe Gln Val Thr Val Asn Asp Ala Gly Lys Gln
 180 185 190
 Lys Lys Ile Trp Thr Thr Ser Thr Thr Val Ala Asp Phe Leu Lys Gln
 195 200 205
 Gln Lys Met Asn Ile Lys Asp Glu Asp Lys Ile Lys Pro Ala Leu Asp
 210 215 220
 Ala Lys Leu Thr Lys Gly Lys Ala Asp Ile Thr Ile Thr Arg Ile Glu
 225 230 235 240
 Lys Val Thr Asp Val Val Glu Glu Lys Ile Ala Phe Asp Val Lys Lys
 245 250 255
 Gln Glu Asp Ala Ser Leu Glu Lys Gly Lys Glu Lys Val Val Gln Lys
 260 265 270
 Gly Lys Glu Gly Lys Leu Lys Lys His Phe Glu Val Val Lys Glu Asn
 275 280 285
 Gly Lys Glu Val Ser Arg Glu Leu Val Lys Glu Glu Thr Ala Glu Gln
 290 295 300
 Ser Lys Asp Lys Val Ile Ala Val Gly Thr Lys Gln Ser Ser Pro Lys
 305 310 315 320
 Phe Glu Thr Val Ser Ala Ser Gly Asp Ser Lys Thr Val Val Ser Arg
 325 330 335
 Ser Asn Glu Ser Thr Gly Lys Val Met Thr Val Ser Ser Thr Ala Tyr
 340 345 350
 Thr Ala Ser Cys Ser Gly Cys Ser Gly His Thr Ala Thr Gly Val Asn
 355 360 365
 Leu Lys Asn Asn Pro Asn Ala Lys Val Ile Ala Val Asp Pro Asn Val
 370 375 380
 Ile Pro Leu Gly Ser Lys Val His Val Glu Gly Tyr Gly Tyr Ala Ile
 385 390 395 400
 Ile Ala Ala Asp Thr Gly Ser Ala Ile Lys Gly Asn Lys Ile Asp Val
 405 410 415
 Phe Phe Pro Ser Lys Ser Asp Ala Ser Asn Trp Gly Val Lys Thr Val
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 Ser Val Lys Val Leu Asn
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<210> 10

<211> 288

<212> PRT

<213> Bacillus subtilis

<400> 10

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Gly	Asp	Thr	Leu	Trp	Gly	Ile	Ser	Gln	Lys	Asn	Gly	Val	Asn	Leu	Lys	35	40	45	
Asp	Leu	Lys	Glu	Trp	Asn	Lys	Leu	Thr	Ser	Asp	Lys	Ile	Ile	Ala	Gly	50	55	60	
Glu	Lys	Leu	Thr	Ile	Ser	Ser	Glu	Glu	Thr	Thr	Thr	Thr	Gly	Gln	Tyr	65	70	75	80
Thr	Ile	Lys	Ala	Gly	Asp	Thr	Leu	Ser	Lys	Ile	Ala	Gln	Lys	Phe	Gly	85	90	95	
Thr	Thr	Val	Asn	Asn	Leu	Lys	Val	Trp	Asn	Asn	Leu	Ser	Ser	Asp	Met	100	105	110	
Ile	Tyr	Ala	Gly	Ser	Thr	Leu	Ser	Val	Lys	Gly	Gln	Ala	Thr	Ala	Ala	115	120	125	
Asn	Thr	Ala	Thr	Glu	Asn	Ala	Gln	Thr	Asn	Ala	Pro	Gln	Ala	Ala	Pro	130	135	140	
Lys	Gln	Glu	Ala	Val	Gln	Lys	Glu	Gln	Pro	Lys	Gln	Glu	Ala	Val	Gln	145	150	155	160
Gln	Gln	Pro	Lys	Gln	Glu	Thr	Lys	Ala	Glu	Ala	Glu	Thr	Ser	Val	Asn	165	170	175	
Thr	Glu	Glu	Lys	Ala	Val	Gln	Ser	Asn	Thr	Asn	Asn	Gln	Glu	Ala	Ser	180	185	190	
Lys	Glu	Leu	Thr	Val	Thr	Ala	Thr	Ala	Tyr	Thr	Ala	Asn	Asp	Gly	Gly	195	200	205	
Ile	Ser	Gly	Val	Thr	Ala	Thr	Gly	Ile	Asp	Leu	Asn	Lys	Asn	Pro	Asn	210	215	220	
Ala	Lys	Val	Ile	Ala	Val	Asp	Pro	Asn	Val	Ile	Pro	Leu	Gly	Ser	Lys	225	230	235	240
Val	Tyr	Val	Glu	Gly	Tyr	Gly	Glu	Ala	Thr	Thr	Ala	Ala	Asp	Thr	Gly	245	250	255	
Gly	Ala	Ile	Lys	Gly	Asn	Lys	Ile	Asp	Val	Phe	Val	Pro	Glu	Lys	Ser	260	265	270	
Ser	Ala	Tyr	Arg	Trp	Gly	Asn	Lys	Thr	Val	Lys	Ile	Lys	Ile	Leu	Asn	275	280	285	

<210> 11
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 <212> PRT
 <213> Clostridium acetobutylicum

<220>
 <221> MOD_RES
 <222> (2)..(3)
 <223> Variable amino acid

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 20 25 30
 Ser Lys Ile Ile Thr Tyr Lys Ser Asn Glu Gly Ser Ile Leu Ser Lys
 35 40 45
 Asn Asn Ile Leu Val Gly Pro Lys Asp Lys Ile Gln Pro Ala Leu Asp
 50 55 60
 Thr Asn Leu Lys Asn Gly Asp Lys Ile Tyr Ile Lys Lys Ala Ile Ser
 65 70 75 80
 Val Glu Val Ala Val Asp Gly Lys Val Arg Arg Val Lys Ser Ser Glu
 85 90 95
 Glu Thr Val Ser Lys Met Leu Lys Ala Glu Lys Ile Pro Leu Ser Lys
 100 105 110
 Val Asp Lys Val Asn Ile Ser Arg Asn Ala Ala Ile Lys Lys Asn Met
 115 120 125
 Lys Ile Ser Ile Thr Arg Val Asn Ser Gln Ile Thr Lys Glu Asn Gln
 130 135 140
 Gln Val Asp Phe Pro Thr Glu Val Ile Ser Asp Asp Ser Met Gly Asn
 145 150 155 160
 Asp Glu Lys Gln Val Ile Gln Gln Gly Gln Ala Gly Glu Lys Glu Val
 165 170 175
 Phe Thr Lys Ile Val Tyr Glu Asp Gly Lys Ala Val Ser Lys Glu Ile
 180 185 190
 Val Gly Glu Val Ile Lys Lys Glu Pro Thr Lys Gln Val Phe Lys Val
 195 200 205
 Gly Thr Leu Gly Val Leu Lys Pro Asp Arg Gly Gly Arg Val Leu Tyr
 210 215 220
 Lys Lys Ser Leu Gln Val Leu Ala Thr Ala Tyr Thr Asp Asp Phe Ser
 225 230 235 240

Tyr Glu Val Glu Gly Gly Trp Thr Ala Leu Tyr Glu Ala Asn Lys Gly
20 25 30

Ala Val Ser Asp Ala Ala Val Ile Tyr Val Gly Gln Glu Leu Val Leu
35 40 45

Pro Gln Ala
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<210> 14
<211> 46
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 14
Thr Ile Lys Val Lys Ser Gly Asp Ser Leu Trp Lys Leu Ser Arg Gln
1 5 10 15

Tyr Asp Thr Thr Ile Ser Ala Leu Lys Ser Glu Asn Lys Leu Lys Ser
20 25 30

Thr Val Leu Tyr Val Gly Gln Ser Leu Lys Val Pro Glu Ser
35 40 45

<210> 15
<211> 44
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 15
Thr Ile Lys Val Lys Ser Gly Asp Ser Leu Trp Lys Leu Ala Gln Thr
1 5 10 15

Tyr Asn Thr Ser Val Ala Ala Leu Thr Ser Ala Asn His Leu Ser Thr
20 25 30

Thr Val Leu Ser Ile Gly Gln Thr Leu Thr Ile Pro
35 40

<210> 16
<211> 43
<212> PRT
<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 16

Thr Tyr Thr Val Lys Ser Gly Asp Ser Leu Trp Val Ile Ala Gln Lys
1 5 10 15

Phe Asn Val Thr Ala Gln Gln Ile Arg Glu Lys Asn Asn Leu Lys Thr
20 25 30

Asp Val Leu Gln Val Gly Gln Lys Leu Val Ile
35 40

<210> 17

<211> 43

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 17

Lys Tyr Thr Val Lys Ser Gly Asp Ser Leu Trp Lys Ile Ala Asn Asn
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Ile Asn Leu Thr Val Gln Gln Ile Arg Asn Ile Asn Asn Leu Lys Ser
20 25 30

Asp Val Leu Tyr Val Gly Gln Val Leu Lys Leu
35 40

<210> 18

<211> 45

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 18

Thr Tyr Thr Val Lys Ser Gly Asp Thr Ile Trp Ala Leu Ser Ser Lys
1 5 10 15

Tyr Gly Thr Ser Val Gln Asn Ile Met Ser Trp Asn Asn Leu Ser Ser
20 25 30

Ser Ser Ile Tyr Val Gly Gln Val Leu Ala Val Lys Gln
35 40 45

<210> 19

<211> 45

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 19

Thr His Ala Val Lys Ser Gly Asp Thr Ile Trp Ala Leu Ser Val Lys
1 5 10 15

Tyr Gly Val Ser Val Gln Asp Ile Met Ser Trp Asn Asn Leu Ser Ser
20 25 30

Ser Ser Ile Tyr Val Gly Gln Lys Leu Ala Ile Lys Gln
35 40 45

<210> 20

<211> 46

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 20

Ser Val Lys Val Lys Ser Gly Asp Thr Leu Trp Ala Leu Ser Val Lys
1 5 10 15

Tyr Lys Thr Ser Ile Ala Gln Leu Lys Ser Trp Asn His Leu Ser Ser
20 25 30

Asp Thr Ile Tyr Ile Gly Gln Asn Leu Ile Val Ser Gln Ser
35 40 45

<210> 21

<211> 43

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 21

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1 5 10 15

Tyr Gly Ile Ser Val Ala Gln Ile Gln Ser Ala Asn Asn Leu Lys Ser
20 25 30

Thr Ile Ile Tyr Ile Gly Gln Lys Leu Leu Leu
35 40

<210> 22
<211> 60
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 22
Thr Tyr Thr Val Lys Lys Gly Asp Thr Leu Trp Asp Ile Ala Gly Arg
1 5 10 15
Phe Tyr Gly Asn Ser Thr Gln Trp Arg Lys Ile Trp Asn Ala Asn Lys
20 25 30
Thr Ala Met Ile Lys Arg Ser Lys Arg Asn Ile Arg Gln Pro Gly His
35 40 45
Trp Ile Phe Pro Gly Gln Lys Leu Lys Ile Pro Gln
50 55 60

<210> 23
<211> 60
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 23
Thr Tyr Thr Val Lys Lys Gly Asp Thr Leu Trp Asp Leu Ala Gly Lys
1 5 10 15
Phe Tyr Gly Asp Ser Thr Lys Trp Arg Lys Ile Trp Lys Val Asn Lys
20 25 30
Lys Ala Met Ile Lys Arg Ser Lys Arg Asn Ile Arg Gln Pro Gly His
35 40 45
Trp Ile Phe Pro Gly Gln Lys Leu Lys Ile Pro Gln
50 55 60

<210> 24
<211> 167
<212> PRT
<213> Mycobacterium tuberculosis

<400> 24
Ala Pro Pro Val Glu Leu Ala Ala Asn Asp Leu Pro Ala Pro Leu Gly
1 5 10 15
Glu Pro Leu Pro Ala Ala Pro Ala Asp Pro Ala Pro Pro Ala Asp Leu
20 25 30

Ala Pro Pro Ala Pro Ala Asp Val Ala Pro Pro Val Glu Leu Ala Val
 35 40 45
 Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala
 50 55 60
 Asp Pro Ala Pro Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu
 65 70 75 80
 Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu
 85 90 95
 Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu Pro Ala Pro Leu Gly
 100 105 110
 Glu Pro Leu Pro Ala Ala Pro Ala Glu Leu Ala Pro Pro Ala Asp Leu
 115 120 125
 Ala Pro Ala Ser Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala
 130 135 140
 Pro Pro Ala Pro Ala Glu Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala
 145 150 155 160
 Pro Pro Ala Ala Val Asn Glu
 165

<210> 25
 <211> 11
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 25
 Ala Pro Pro Val Glu Leu Ala Ala Asn Asp Leu
 1 5 10

<210> 26
 <211> 11
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 26
 Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu
 1 5 10

<210> 27
 <211> 15
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 27
 Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp Leu
 1 5 10 15

<210> 28
 <211> 14
 <212> PRT
 <213> Mycobacterium tuberculosis

 <400> 28
 Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Glu
 1 5 10

<210> 29
 <211> 7
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 29
 Pro Ala Pro Pro Ala Asp Leu
 1 5

<210> 30
 <211> 8
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 30
 Ala Pro Pro Ala Pro Ala Asp Leu
 1 5

<210> 31
 <211> 8
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 31
 Ala Pro Pro Ala Pro Ala Asp Val
 1 5

<210> 32
 <211> 8
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 32
 Ala Pro Pro Ala Pro Ala Glu Leu
 1 5

<210> 33
 <211> 8
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 33

Ala Pro Pro Ala Pro Ala Glu Val
1 5

<210> 34

<211> 478

<212> PRT

<213> *Listeria monocytogenes*

<400> 34

Met Asn Met Lys Lys Ala Thr Ile Ala Ala Thr Ala Gly Ile Ala Val
1 5 10 15

Thr Ala Phe Ala Ala Pro Thr Ile Ala Ser Ala Ser Thr Val Val Val
20 25 30

Glu Ala Gly Asp Thr Leu Trp Gly Ile Ala Gln Ser Lys Gly Thr Thr
35 40 45

Val Asp Ala Ile Lys Lys Ala Asn Asn Leu Thr Thr Asp Lys Ile Val
50 55 60

Pro Gly Gln Lys Leu Gln Val Asn Asn Glu Val Ala Ala Ala Glu Lys
65 70 75 80

Thr Glu Lys Ser Val Ser Ala Thr Trp Leu Asn Val Arg Thr Gly Ala
85 90 95

Gly Val Asp Asn Ser Ile Ile Thr Ser Ile Lys Gly Gly Thr Lys Val
100 105 110

Thr Val Glu Thr Thr Glu Ser Asn Gly Trp His Lys Ile Thr Tyr Asn
115 120 125

Asp Gly Lys Thr Gly Phe Val Asn Gly Lys Tyr Leu Thr Asp Lys Ala
130 135 140

Val Ser Thr Pro Val Ala Pro Thr Gln Glu Val Lys Lys Glu Thr Thr
145 150 155 160

Thr Gln Gln Ala Ala Pro Val Ala Glu Thr Lys Thr Glu Val Lys Gln
165 170 175

Thr Thr Gln Ala Thr Thr Pro Ala Pro Lys Val Ala Glu Thr Lys Glu
180 185 190

Thr Pro Val Ile Asp Gln Asn Ala Thr Thr His Ala Val Lys Ser Gly
195 200 205

Asp Thr Ile Trp Ala Leu Ser Val Lys Tyr Gly Val Ser Val Gln Asp
210 215 220

Ile Met Ser Trp Asn Asn Leu Ser Ser Ser Ser Ile Tyr Val Gly Gln
225 230 235 240

Lys Leu Ala Ile Lys Gln Thr Ala Asn Thr Ala Thr Pro Lys Ala Glu

245										250					255				
Val	Lys	Thr	Glu	Ala	Pro	Ala	Ala	Glu	Lys	Gln	Ala	Ala	Pro	Val	Val				
			260					265					270						
Lys	Glu	Asn	Thr	Asn	Thr	Asn	Thr	Ala	Thr	Thr	Glu	Lys	Lys	Glu	Thr				
		275					280					285							
Ala	Thr	Gln	Gln	Gln	Thr	Ala	Pro	Lys	Ala	Pro	Thr	Glu	Ala	Ala	Lys				
	290					295					300								
Pro	Ala	Pro	Ala	Pro	Ser	Thr	Asn	Thr	Asn	Ala	Asn	Lys	Thr	Asn	Thr				
305					310					315					320				
Asn	Thr	Asn	Thr	Asn	Asn	Thr	Asn	Thr	Pro	Ser	Lys	Asn	Thr	Asn	Thr				
				325					330						335				
Asn	Ser	Asn	Thr	Asn	Thr	Asn	Thr	Asn	Ser	Asn	Thr	Asn	Ala	Asn	Gln				
			340					345					350						
Gly	Ser	Ser	Asn	Asn	Asn	Ser	Asn	Ser	Ser	Ala	Ser	Ala	Ile	Ile	Ala				
		355					360					365							
Glu	Ala	Gln	Lys	His	Leu	Gly	Lys	Ala	Tyr	Ser	Trp	Gly	Gly	Asn	Gly				
	370					375					380								
Pro	Thr	Thr	Phe	Asp	Cys	Ser	Gly	Tyr	Thr	Lys	Tyr	Val	Phe	Ala	Lys				
385					390					395					400				
Ala	Gly	Ile	Ser	Leu	Pro	Arg	Thr	Ser	Gly	Ala	Gln	Tyr	Ala	Ser	Thr				
				405					410					415					
Thr	Arg	Ile	Ser	Glu	Ser	Gln	Ala	Lys	Pro	Gly	Asp	Leu	Val	Phe	Phe				
			420					425					430						
Asp	Tyr	Gly	Ser	Gly	Ile	Ser	His	Val	Gly	Ile	Tyr	Val	Gly	Asn	Gly				
		435					440					445							
Gln	Met	Ile	Asn	Ala	Gln	Asp	Asn	Gly	Val	Lys	Tyr	Asp	Asn	Ile	His				
	450					455					460								
Gly	Ser	Gly	Trp	Gly	Lys	Tyr	Leu	Val	Gly	Phe	Gly	Arg	Val						
465					470					475									

<210> 35
 <211> 758
 <212> DNA
 <213> Micrococcus luteus

<220>
 <221> CDS
 <222> (66) .. (728)

<400> 35
 accaaggaga aggacgaccc cgggtgtgcct cggccgccga tcagcgagga ctcgccatgg 60

acacc atg act ctc ttc acc act tcc gcc acc cgc tcc cgc cgt gcc acc 110
Met Thr Leu Phe Thr Thr Ser Ala Thr Arg Ser Arg Arg Ala Thr
1 5 10 15
gcc tcg atc gtc gcg ggc atg acc ctc gcc ggc gcc gcc gcc gtg ggc 158
Ala Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly
20 25 30
ttc tcc gcc ccg gcc cag gcc gcc acc gtg gac acc tgg gac cgc ctc 206
Phe Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu
35 40 45
gcc gag tgc gag tcc aac ggc acc tgg gac atc aac acc ggc aac ggc 254
Ala Glu Cys Glu Ser Asn Gly Thr Trp Asp Ile Asn Thr Gly Asn Gly
50 55 60
ttc tac ggc ggc gtg cag ttc acc ctg tcc tcc tgg cag gcc gtc ggc 302
Phe Tyr Gly Gly Val Gln Phe Thr Leu Ser Ser Trp Gln Ala Val Gly
65 70 75
ggc gaa ggc tac ccg cac cag gcc tcg aag gcc gag cag atc aag cgc 350
Gly Glu Gly Tyr Pro His Gln Ala Ser Lys Ala Glu Gln Ile Lys Arg
80 85 90 95
gcc gag atc ctc cag gac ctg cag ggc tgg ggc gcg tgg ccg ctg tgc 398
Ala Glu Ile Leu Gln Asp Leu Gln Gly Trp Gly Ala Trp Pro Leu Cys
100 105 110
tcg cag aag ctg ggc ctg acc cag gct gac gcg gac gcc ggt gac gtg 446
Ser Gln Lys Leu Gly Leu Thr Gln Ala Asp Ala Asp Ala Gly Asp Val
115 120 125
gac gcc acc gag gcc gcc ccg gtc gcc gtg gag cgc acg gcc acc gtg 494
Asp Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val
130 135 140
cag cgc cag tcc gcc gcg gac gag gct gcc gcc gag cag gcc gct gcc 542
Gln Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala Ala
145 150 155
gcg gag cag gcc gtc gtc gcc gag gcc gag acc atc gtc gtc aag tcc 590
Ala Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys Ser
160 165 170 175
ggt gac tcc ctc tgg acg ctc gcc aac gag tac gag gtg gag ggt ggc 638
Gly Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly Gly
180 185 190
tgg acc gcc ctc tac gag gcc aac aag ggc gcc gtc tcc gac gcc gcc 686
Trp Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala Ala
195 200 205
gtg atc tac gtc ggc cag gag ctc gtc ctg ccg cag gcc tga 728
Val Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala
210 215 220
gacgcctgac cggccccccg gaccggtacc 758

<210> 36
 <211> 220
 <212> PRT
 <213> Micrococcus luteus

<400> 36
 Met Thr Leu Phe Thr Thr Ser Ala Thr Arg Ser Arg Arg Ala Thr Ala
 1 5 10 15
 Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly Phe
 20 25 30
 Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu Ala
 35 40 45
 Glu Cys Glu Ser Asn Gly Thr Trp Asp Ile Asn Thr Gly Asn Gly Phe
 50 55 60
 Tyr Gly Gly Val Gln Phe Thr Leu Ser Ser Trp Gln Ala Val Gly Gly
 65 70 75 80
 Glu Gly Tyr Pro His Gln Ala Ser Lys Ala Glu Gln Ile Lys Arg Ala
 85 90 95
 Glu Ile Leu Gln Asp Leu Gln Gly Trp Gly Ala Trp Pro Leu Cys Ser
 100 105 110
 Gln Lys Leu Gly Leu Thr Gln Ala Asp Ala Asp Ala Gly Asp Val Asp
 115 120 125
 Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val Gln
 130 135 140
 Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala Ala Ala
 145 150 155 160
 Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys Ser Gly
 165 170 175
 Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly Gly Trp
 180 185 190
 Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala Ala Val
 195 200 205
 Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala
 210 215 220

<210> 37
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 37
 gcsacsgtsg acacstggga ccgsctsgcs gag 33

<210> 38
 <211> 19
 <212> PRT
 <213> Micrococcus luteus

<220>
 <221> MOD_RES
 <222> (13)
 <223> Variable amino acid

<220>
 <221> MOD_RES
 <222> (18)
 <223> Variable amino acid

<400> 38
 Ala Thr Val Asp Thr Trp Asp Arg Leu Ala Glu Glu Xaa Ser Asn Gly
 1 5 10 15
 Thr Xaa Asp

<210> 39
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 39
 ccgccgtaga agccgttg 18

<210> 40
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 40
 agttcaccct gtcctcctg 19

<210> 41
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<220>
 <221> modified_base
 <222> (9)
 <223> i

<220>
 <221> modified_base
 <222> (15)
 <223> i

<220>
 <221> modified_base
 <222> (21)
 <223> i

<400> 41
 gcytgrtgng grtancctc ncc

23

<210> 42
 <211> 12
 <212> PRT
 <213> Micrococcus luteus

<400> 42
 Val Gly Gly Glu Gly Tyr Pro His Gln Ala Ser Lys
 1 5 10

<210> 43
 <211> 182
 <212> PRT
 <213> Micrococcus luteus

<400> 43
 Ala Thr Val Asp Thr Trp Asp Arg Leu Ala Glu Cys Glu Ser Asn Gly
 1 5 10 15
 Thr Trp Asp Ile Asn Thr Gly Asn Gly Phe Tyr Gly Gly Val Gln Phe
 20 25 30
 Thr Leu Ser Ser Trp Gln Ala Val Gly Gly Glu Gly Tyr Pro His Gln
 35 40 45
 Ala Ser Lys Ala Glu Gln Ile Lys Arg Ala Glu Ile Leu Gln Asp Leu
 50 55 60

Gln Gly Trp Gly Ala Trp Pro Leu Cys Ser Gln Lys Leu Gly Leu Thr
 65 70 75 80
 Gln Ala Asp Ala Asp Ala Gly Asp Val Asp Ala Thr Glu Ala Ala Pro
 85 90 95
 Val Ala Val Glu Arg Thr Ala Thr Val Gln Arg Gln Ser Ala Ala Asp
 100 105 110
 Glu Ala Ala Ala Glu Gln Ala Ala Ala Glu Gln Ala Val Val Ala
 115 120 125
 Glu Ala Glu Thr Ile Val Val Lys Ser Gly Asp Ser Leu Trp Thr Leu
 130 135 140
 Ala Asn Glu Tyr Glu Val Glu Gly Gly Trp Thr Ala Leu Tyr Glu Ala
 145 150 155 160
 Asn Lys Gly Ala Val Ser Asp Ala Ala Val Ile Tyr Val Gly Gln Glu
 165 170 175
 Leu Val Leu Pro Gln Ala
 180

<210> 44
 <211> 299
 <212> DNA
 <213> Streptomyces coelicolor

<220>
 <221> CDS
 <222> (3) .. (299)

<400> 44
 gg atc cgc acc gcc gcg gta acc ctg gtc gcc gcg acc gca ctc ggg 47
 Ile Arg Thr Ala Ala Val Thr Leu Val Ala Ala Thr Ala Leu Gly
 1 5 10 15
 gcg acc ggc gaa gcg gtg gcc gcg ccc tcg gcg ccc ctg cgc acc gac 95
 Ala Thr Gly Glu Ala Val Ala Ala Pro Ser Ala Pro Leu Arg Thr Asp
 20 25 30
 tgg gac gcc atc gcc gcg tgc gag tcc agc ggc aac tgg cag gcg aac 143
 Trp Asp Ala Ile Ala Ala Cys Glu Ser Ser Gly Asn Trp Gln Ala Asn
 35 40 45
 acc ggc aac ggc tac tac ggc ggc ctg cag ttc gca cgg tcc agc tgg 191
 Thr Gly Asn Gly Tyr Tyr Gly Gly Leu Gln Phe Ala Arg Ser Ser Trp
 50 55 60
 atc gcc gcc ggc ggc ctc aag tac gcc ccg cgc gcg gac ctc gcc acc 239
 Ile Ala Ala Gly Gly Leu Lys Tyr Ala Pro Arg Ala Asp Leu Ala Thr
 65 70 75
 cgc ggc gag cag atc gcc gtg gcg gaa cgc ctc gcc cgt ctg cag ggg 287
 Arg Gly Glu Gln Ile Ala Val Ala Glu Arg Leu Ala Arg Leu Gln Gly

80	85	90	95	
atg tcc gcc tgg				299
Met Ser Ala Trp				

<210> 45
 <211> 99
 <212> PRT
 <213> Streptomyces coelicolor

<400> 45
 Ile Arg Thr Ala Ala Val Thr Leu Val Ala Ala Thr Ala Leu Gly Ala
 1 5 10 15
 Thr Gly Glu Ala Val Ala Ala Pro Ser Ala Pro Leu Arg Thr Asp Trp
 20 25 30
 Asp Ala Ile Ala Ala Cys Glu Ser Ser Gly Asn Trp Gln Ala Asn Thr
 35 40 45
 Gly Asn Gly Tyr Tyr Gly Gly Leu Gln Phe Ala Arg Ser Ser Trp Ile
 50 55 60
 Ala Ala Gly Gly Leu Lys Tyr Ala Pro Arg Ala Asp Leu Ala Thr Arg
 65 70 75 80
 Gly Glu Gln Ile Ala Val Ala Glu Arg Leu Ala Arg Leu Gln Gly Met
 85 90 95
 Ser Ala Trp

<210> 46
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 46	
gtcagaattc atatggccac cgtggacacc tggg	34

<210> 47
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 47	
tgacggatcc tattaggcct gcggcaggac gag	33

<210> 48
 <211> 35
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Primer

 <400> 48
 atcagaattc atatggacga catcgattgg gacgc 35

 <210> 49
 <211> 29
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Primer

 <400> 49
 cgcaggatcc cctcaatcgt ccctgctcc 29

 <210> 50
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Primer

 <400> 50
 gaagagaatt ccttccatca cga 23

 <210> 51
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Primer

 <400> 51
 ccaaacgaat tcggtcaatc ac 22

 <210> 52
 <211> 26
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Primer

<400> 52
gcaaggatcc cagactaaaa aaacag 26

<210> 53
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 53
atcaggatcc atattattag tttaaga 27

<210> 54
<211> 663
<212> DNA
<213> Micrococcus luteus

<220>
<221> CDS
<222> (1)..(663)

<400> 54
atg act ctc ttc acc act tcc gcc acc cgc tcc cgc cgt gcc acc gcc 48
Met Thr Leu Phe Thr Ser Ala Thr Arg Ser Arg Arg Ala Thr Ala
1 5 10 15
tcg atc gtc gcg ggc atg acc ctc gcc ggc gcc gcc gcc gtg ggc ttc 96
Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly Phe
20 25 30
tcc gcc ccg gcc cag gcc gcc acc gtg gac acc tgg gac cgc ctc gcc 144
Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu Ala
35 40 45
gag tgc gag tcc aac ggc acc tgg gac atc aac acc ggc aac ggc ttc 192
Glu Cys Glu Ser Asn Gly Thr Trp Asp Ile Asn Thr Gly Asn Gly Phe
50 55 60
tac ggc ggc gtg cag ttc acc ctg tcc tcc tgg cag gcc gtc ggc ggc 240
Tyr Gly Gly Val Gln Phe Thr Leu Ser Ser Trp Gln Ala Val Gly Gly
65 70 75 80
gaa ggc tac ccg cac cag gcc tcg aag gcc gag cag atc aag cgc gcc 288
Glu Gly Tyr Pro His Gln Ala Ser Lys Ala Glu Gln Ile Lys Arg Ala
85 90 95
gag atc ctc cag gac ctg cag ggc tgg ggc gcg tgg ccg ctg tgc tcg 336
Glu Ile Leu Gln Asp Leu Gln Gly Trp Gly Ala Trp Pro Leu Cys Ser
100 105 110
cag aag ctg ggc ctg acc cag gct gac gcg gac gcc ggt gac gtg gac 384
Gln Lys Leu Gly Leu Thr Gln Ala Asp Ala Asp Ala Gly Asp Val Asp

115	120	125	
gcc acc gag gcc gcc ccg gtc gcc gtg gag cgc acg gcc acc gtg cag			432
Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val Gln			
130	135	140	
cgc cag tcc gcc gcg gac gag gct gcc gcc gag cag gcc gct gcc gcg			480
Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala Ala Ala			
145	150	155	160
gag cag gcc gtc gtc gcc gag gcc gag acc atc gtc gtc aag tcc ggt			528
Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys Ser Gly			
	165	170	175
gac tcc ctc tgg acg ctc gcc aac gag tac gag gtg gag ggt ggc tgg			576
Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly Gly Trp			
	180	185	190
acc gcc ctc tac gag gcc aac aag ggc gcc gtc tcc gac gcc gcc gtg			624
Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala Ala Val			
	195	200	205
atc tac gtc ggc cag gag ctc gtc ctg ccg cag gcc tga			663
Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala			
210	215	220	

<210> 55
 <211> 6
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 55
 Ala Pro Pro Ala Asp Leu
 1 5

<210> 56
 <211> 7
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 56
 Ala Pro Ala Ser Ala Asp Leu
 1 5

<210> 57
 <211> 8
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 57
 Ala Pro Pro Ala Pro Ala Glu Leu
 1 5

<210> 58
 <211> 4
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 58
 Ala Pro Pro Ala
 1

<210> 59
 <211> 4
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 59
 Ala Val Asn Glu
 1

<210> 60
 <211> 15
 <212> PRT
 <213> Mycobacterium tuberculosis

<220>
 <221> MOD_RES
 <222> (14)
 <223> Asp or Glu

<400> 60
 Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Xaa Leu
 1 5 10 15

<210> 61
 <211> 8
 <212> PRT
 <213> Mycobacterium tuberculosis

<220>
 <221> MOD_RES
 <222> (7)
 <223> Asp or Glu

<220>
 <221> MOD_RES
 <222> (8)
 <223> Leu or Val

<400> 61
 Ala Pro Pro Ala Pro Ala Xaa Xaa
 1 5

<210> 62
<211> 11
<212> PRT
<213> Mycobacterium tuberculosis

<220>
<221> MOD_RES
<222> (8)
<223> Ala or Val

<400> 62
Ala Pro Pro Val Glu Leu Ala Xaa Asn Asp Leu
1 5 10

<210> 63
<211> 14
<212> PRT
<213> Mycobacterium tuberculosis

<400> 63
Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp
1 5 10